

This publication reports scientific material selected for relevance to tobacco use and related health questions. No effort is made to include repetitive charges against tobacco.

Scientists Report Air Pollution Plays Lung Cancer Role

"General air pollutants of industrial and industry-related origin played a definite role in the causation and rise in frequency of lung cancers during recent decades," a team of six scientists reports.* Their study covered eight U.S. metropolitan areas.

The scientists observed that "The far reaching contentions made in favor of the cigarette theory of lung cancer causation read rather convincingly as long as one either does not know or conveniently neglects to critically consider the indeed large and reliable amount of evidence that is in disagreement with such concepts offered often as facts and proof."

Conclusions of the study were:

"1. Bioassays performed on mice with four subcutaneously injected solvent fractions of the particulate phase of air pollutants of eight cities containing aromatic as well as aliphatic hydrocarbons, yielded cancerous reactions with all four fractions.

"2. The cancer yield obtained by the various fractions differed with the

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* "Carcinogenic bioassays on air pollutants." *Proceedings, 53rd Annual Meeting, Air Pollution Control Association, May 25, 1960.*

Inhalation Tests Fail to Cause Lung Cancer; Virus Suggested

Four researchers report* that exposure of mice to cigarette smoke did not induce lung cancer in any of the animals. The "extreme variability" of the animals' response to the smoke indicates the possibility of a virus influence, which is being studied further, they said.

The scientists used 603 female CF₁ mice, of which 243 were controls and 360 were exposed daily to the smoke of from one-half to six cigarettes for periods varying from a month to almost two years.

In no instance was an invasive lung cancer seen, they said, in reporting on their investigation of the tracheobronchial tree and lungs of the mice.

"The wide spectrum of findings and the independence of dose and duration of exposure to cigarette smoke would seem to detract from the importance of cigarette smoke as an injurious agent invariably affecting the major bronchi and would, rather, point to contributing factors characteristic for the individual animals," they said.

Viruses Need Attention

There may be elements in the host that render the tissue susceptible to alteration from exposure to the smoke, they said. "Viruses deserve special consideration," they noted, "the more so since they occur with a certain frequency in mice and are capable of producing respiratory lesions."

They said their studies resulted in these observations:

"1. Regardless of dose or time of exposure to cigarette smoke, there was extreme variability of response from mouse to mouse, ranging from 'no alterations' to bronchitis associated with atypical epithelial proliferation.

"2. No relationship between severity or frequency of bronchial lesions and dose or time of exposure to cigarette smoke was found.

"3. There was an absence of invasive bronchogenic carcinoma in

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* "A correlated histological, cytological, and cytochemical study of the tracheobronchial tree and lungs of mice exposed to cigarette smoke." *Cancer, July-August, 1960.*

TB and Lung Cancer

Lung cancer occurs 20 times more frequently among patients with tuberculosis than in the general population, two doctors have found.

Drs. Roger E. Campbell and Felix A. Hughes, Jr., Memphis, Tenn., reported on case histories of 11,000 tuberculosis patients and 650 lung cancer patients in an attempt to establish the relative incidence of the co-existence of these two diseases in the same patient.

The study suggests that this incidence may increase as the tuberculosis patient grows older, they said in the *Journal of Thoracic and Cardiovascular Surgery* for July 1960.

Genotypic Differences Found Between Smokers and Non-Smokers

Cigarette smokers are more extroverted than non-smokers, says a report* by four British scientists who studied 2,360 males.

Smokers "live it up more," and this may lower their resistance and expose them to conditions that may cause cancer, they said.

The subjects were selected on a predetermined sampling plan, accord-

ing to age, social class and smoking habits.

The data "weakly" confirmed the theory that smokers are less rigid, said the report. But it failed to show that smokers are more neurotic than non-smokers. Pipe smokers were the most introverted group studied, they said.

The report continues:

"On the whole, the data confirm the view that genotypic differences exist between smokers and non-

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* "Smoking and personality." H. J. Eysenck, Ph.D., Institute of Psychiatry, and Mollie Tarrant, B.A., Myra Woolf, B.Sc., and L. England, Mass Observation Ltd., London. *British Medical Journal, May 14, 1960.*

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Air Pollution Studies Provide New Leads; Say Role of Smoking Is Overemphasized

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fraction as well as with the city from which air-pollutants were collected.

"3. With the exception of air pollutants of Birmingham, which showed the highest total cancer yield and which had also the highest amount of 3,4-benzpyrene, there was no consistent correlation between the degree of carcinogenic potency of the solvent fractions bioassayed, the amount of 3,4-benzpyrene, and the reported lung cancer mortality rate in the eight cities studied.

"4. It appears that every community has an atmospheric carcinogenic spectrum which depends upon local conditions which include not only industrial activities and traffic conditions, but also climate, solarization, and geologic conditions.

"5. An exploration of the relative role and importance of these factors for the lung cancer panorama of individual cities should include an investigation not only of the aromatic and aliphatic hydrocarbons present in the particulate phase of air pollutants but also of metallic, mineralic and radioactive constituents as well as the relative chemical stability and the physical status of some of these elements in the atmosphere.

"6. The present studies represent merely a first and preliminary step in a prolonged and comprehensive program dealing with relationship between air pollutants and health hazards, including cancer."

The scientists cited five reasons why cigarette smoking is not "of overwhelming importance . . ."

"1. The increase in the frequency of lung cancers started on the European continent before cigarette smoking assumed in these countries significant proportions.

"2. The marked irregularity of the lung cancer mortality rates, of their progression rates, and of their sex distribution rates in different countries, different regions and different metropolitan areas of the same country, militate strongly against a predominant causal action of a single factor such as cigarette smoking.

"3. The consistent discrepancy between high urban lung cancer rates against low rural rates observed in several countries carries the same connotation.

"4. The definite differences in the lung cancer rates between native and

immigrant whites observed in New Zealand, South Africa and Ohio despite presumably similar smoking habits, does not favor the concept of a major role of cigarette smoking in the causation of lung cancer.

"5. The absence of a positive statistical relation of cigarette smoking to cancers of the hands and lips which become intensely exposed to incomplete combustion products of cigarette tobacco, represents evidence which disagrees with observations made among individuals exposed to coal tar fumes and dusts and developing cancers of the skin and lung."

They also said, "A definite amount of reservation is indicated in accepting the claims advanced by some parties concerning the role of cigarette smoking as a direct or indirect factor in the causation of lung cancer. Nevertheless the type and amount of evidence on this matter justifies the conclusion that cigarette smoking has contributed to or aggravated the action of other carcinogenic respiratory pollutants by producing especially functional disturbances on the bronchial mucosa . . .

"It would be most unwise, on the other hand, if through an exaggerated emphasis placed on the significance of cigarette smoking, the study of general and local industry-related air pollutants would be impaired and neglected," they added. "The available evidence rather definitely assigns to these factors an important role as human respiratory carcinogens."

The researchers were W. C. Hueper and W. W. Payne, National Cancer Institute; P. Kotin and H. Falk, University of Southern California, Los Angeles, and E. C. Tabor and E. Sawicki, Robert A. Taft Sanitary Engineering Center, Cincinnati, O.

Smoking and the Heart

No relation between coronary heart disease and smoking or alcohol was found in a study of 553 coronary cases by Dr. Krishna S. Mathur, Agra, India.

Incidence of the disease was high in the urban population, in the upper socio-economic classes, and in persons with highest dietary fat consumption, he said in the May 1960 issue of *Circulation*.

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Inhalation Tests Fail To Cause Lung Cancer

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mice exposed to cigarette smoke, even in those that had nearly life span exposure.

"4. There was a decrease in the frequency of bronchial lesions, suggesting reversibility, after cessation of exposure.

"5. An early increase of intranuclear protein (before microscopic alterations) was followed by a gradual increase of deoxyribonucleic acid (DNA) content.

"6. There was a return to normal intranuclear protein and DNA content, suggesting reversibility of cytochemical changes after cessation of exposure."

The researchers were Cecilie Leuchtenberger, Ph.D., Rudolf Leuchtenberger, M.D., William Zebrun, Ph.D., and Patricia Shaffer. The Leuchtenbergers now are at the Children's Cancer Research Foundation, Boston. The others are at the Institute of Pathology, Western Reserve University, Cleveland, O. They acknowledged support of their study by a grant from the Tobacco Industry Research Committee.

Stress Is Big Factor In Heart Ailments

Emotional stress plays a role of "major significance" in the etiological spectrum of coronary artery disease, according to Henry I. Russek, M.D., consultant in cardiovascular diseases to the U. S. Public Health Service Hospital, Staten Island, N. Y.

"This finding has been confirmed in a study of 100 young coronary patients in which emotional strain associated with job responsibility appeared to be far more significant . . . than heredity, dietary fat, tobacco, obesity or physical activity . . ."

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